

Listing of Claims

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1. (Amended) A packet data communication system having a control station (13) and a plurality of remote terminals (11) that communicate on demand with said control station over a wireless link (17), said control station comprising a data port for receiving data packets destined for said terminals; means for generating (20) a plurality of carriers forming data channels for carrying said data packets; means (20) for assigning said data packets destined for a particular terminal to one or more of said data channels; means (20) for generating a carrier forming a control channel carrying control information pertaining to said data channels; and means (25, 26, 27) for simultaneously transmitting said carriers carrying said data packets and said control channel to said remote terminals as ~~an r.f.~~ a radio frequency signal; and each of said terminals comprising a receiver (31, 32) for receiving said r.f. radio frequency signal; ~~characterized in that each said terminal comprises~~ an analog-to-digital converter (33) for digitizing said received signal; a buffer (34) for storing said digitized received signal; and a processing means (35) for continually monitoring the contents of said buffer to extract control information from said control channel, and said processing means processing said stored signal to extract said packet data destined for said terminal from one or more of said data channels in response to control information received on said control channel identifying said packet data as destined for said terminal.

2. (Amended) A packet data communication system as claimed in claim 1, ~~characterized in that~~ wherein said transmitting means (25, 26, 27) transmits said carriers as a

framed baseband signal, each frame containing one or more data channels and the control channel.

3. (Amended) A packet data communication system as claimed in claim 2, ~~characterized in that~~ wherein said buffer (34) stores a frame of raw baseband data.

4. (Amended) A packet data communication system as claimed in claim 3, ~~characterized in that~~ wherein said processing means (35) comprises a digital signal processor.

B2 5. (Amended) A packet data communication system as claimed in claim 1, ~~characterized in that~~ wherein each said terminal further comprises a demodulator (31) for demodulating said received ~~r.f.~~ radio frequency signal to a baseband signal prior to analog-to-digital conversion.

6. (Amended) A packet data communication system as claimed in claim 5, ~~characterized in that~~ wherein said demodulator (31) is a quadrature demodulator.

7. (Amended) A packet data communication system as claimed in claim 4, ~~characterized in that~~ wherein said digital signal processor (35) first decimates and then demodulates the control channel.

8. (Amended) A packet data communication system as defined in claim 1, ~~characterized in that~~ wherein said means for assigning data packets includes means (50) to dynamically assign said data packets to one or more channel types.

9. (Amended) A packet data communication system as defined in claim 8 wherein said channel types include any one or more of the following: random access channels; assigned TDM channels; assigned TDMA channels; and dedicated channels.

B2 10. (Amended) A method of establishing communication between a control station and one or more of a plurality of mobile terminals over a wireless link, comprising generating a plurality of carriers forming channels; dynamically assigning one or more data carriers to a destination terminal; modulating said one or more carriers with packet data for said destination terminal; generating a control carrier containing control information pertaining to said modulated carriers; transmitting said data carriers and said control carrier as an aggregate signal to said destination terminal; ~~characterized in that~~ wherein said received aggregate signal is stored in a buffer at said destination terminal; said control information is continually extracted from said aggregate signal stored in said buffer; and data is extracted from said buffered signal in response to control information received on said control channel identifying said packet data as destined for said terminal.

11. (Amended) A method as claimed in claim 10, ~~characterized in that~~ wherein said aggregate signal is transmitted as a framed signal, each frame containing one or more of said data carriers and said control carrier.

12. (Amended) A method as claimed in claim 11, ~~characterized in that~~ wherein said aggregate signal is stored in said buffer one frame at a time, and said control information is extracted from said stored frame to determine whether it contains data intended for the destination terminal.

13. (Amended) A method as claimed in claim 10, ~~characterized in that~~ wherein said aggregate signal comprises a baseband signal that is modulated onto an ~~r.f.~~ radio frequency carrier.

14. (Amended) A method as claimed in claim 13, ~~characterized in that~~ wherein said ~~r.f.~~ radio frequency carrier is first demodulated at said terminals to extract said baseband signal, and said baseband signal is then passed through an analog-to-digital converter prior to being buffered in said terminal.

B2 15. (Amended) A method as claimed in claim 13, ~~characterized in that~~ wherein said control carrier is located substantially in the center of the received band.

16. (Amended) A method as claimed in claim 15, ~~characterized in that~~ wherein said control carrier is first decimated prior to demodulation.

17. (Amended) A mobile terminal forming part of a packet data communication system having a control station and a plurality of remote terminals that communicate on demand with said control station over a wireless link, said terminal comprising: a receiver (31, 32) for receiving an incoming signal having a control channel containing control information and one or more data channels having data packets; and an analog-to-digital converter (33) for digitizing said received signal; ~~characterized in that~~ a buffer that stores said digitized received signal, and a processor that continually monitors said stored signal to extract control information from said control channel and ~~extracts~~ extract packet data destined for said terminal from one or more of said data channels in response to the extracted

control information received on said control channel identifying said packet data as destined for said terminal.

18. (Amended) A mobile terminal as claimed in claim 17, further comprising a demodulator (34) for demodulating said incoming signal to baseband before said incoming signal is passed to said analog-to-digital converter (33).

19. (Amended) A mobile terminal as claimed in claim 17 15, ~~characterized in that~~ wherein said processor is a digital signal processor.

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20. (Amended) A mobile terminal as claimed in claim 19 16, wherein digital signal processor first decimates said control channel prior to demodulation.

21. (Amended) A mobile terminal as claimed in claim 17 including means (50) to dynamically assign data packets to various channel types for communicating with said control station.

22. (New) A packet data communication system comprising:

a control station comprising:

a processor that generates a plurality data channels for carrying data packets, assigns the data packets to one or more of the data channels, and generates a control channel carrying control information pertaining to said data channels; and,

a transmitter for simultaneously transmitting the data channels and the control channel as an aggregate signal; and,

a plurality of remote terminals that communicate with said control station, each of said remote terminals comprising:

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a receiver receiving the aggregate signal;

an analog-to-digital converter digitizing the received aggregate signal;

a buffer storing the digitized received aggregate signal; and,

a processor continually monitoring the contents of said buffer, extracting control information from said control channel, and extracting data packets destined for said terminal from one or more of the data channels in response to the extracted control information identifying the packet data as destined for said terminal.
